

# Fig. 1

## "FatherInfo" Content File

```
<?xml version="1.0" standalone="yes">
<!-- file name : FatherInfo.xml-->
<FatherInfo DateUpdated="February 1, 2000" >
  <Name>
    Yoichiro Sato
  </Name>
  <Work>
    <CompanyName>
      ABC Paper Mill
    </CompanyName>
    <CompanyAddress>
      3-5 Uchisaiwai-cho, Niigata
    </CompanyAddress>
    <CompanyTelephone>
      025 432 3221
    </CompanyTelephone>
    <FatherContactAtWork Cname="C1" >
      <DirectPhone>
        025 432 3229
      </DirectPhone>
      <Secretary>
        <SecretaryName>
          Ken Morita
        </SecretaryName>
        <SecretaryPhone>
          025 432 3231
        </SecretaryPhone>
      </Secretary>
    </FatherContactAtWork>
  </Work>
  <AnnualSalary Cname="C2" >
    10,000,000
  </AnnualSalary>
</FatherInfo>
```

## *Fig. 2*

### “MotherInfo” Content File

```
<?xml version="1.0" standalone="yes">
<!-- file name : MotherInfo.xml-->
<MotherInfo>
  <Name>
    Keiko Sato
  </Name>
  <Work>
    <CompanyName>
      IROHA Bakery
    </CompanyName>
    <CompanyAddress>
      12-8 Terao-cho Niigata
    </CompanyAddress>
    <CompanyTelephone>
      025 876 1453
    </CompanyTelephone>
    <MotherContactAtWork Cname = "H1" >
      <DirectPhone>
        025 876 1458
      </DirectPhone>
      <EmergencyNumber>
        025 876 1450
      </EmergencyNumber>
    </MotherContactAtWork>
  </Work>
  <AnnualSalary Cname = "H2" >
    8,000,000
  </AnnualSalary>
</MotherInfo>
```

# *Fig. 3*

## “SatoBookkeeping” Content File

```
<?xml version="1.0" standalone="yes">
<!-- filename : SatoBookkeeping.xml -->
<SatoBookkeeping>
  <AnnualIncome Cname = "Z" >
  </AnnualIncome>
  <AnnualExpense>
    <Food>
    </Food>
    <HousingLoan>
    </HousingLoan>
    <Miscellaneous>
    </Miscellaneous>
  </AnnualExpense>
</SatoBookkeeping>
```

## *Fig. 4*

### “SatoTelephoneDirecory” Content File

```
<?xml version="1.0" standalone="yes" >
<!-- file name : SatoTelephoneDirectory.xml -->
<SatoTelephoneDirectory>
    <Home>
        025 634 9120
    </Home>
    <Work Cname= "W" >
    </Work>
</SatoTelephoneDirectory>
```

## *Fig. 5*

### "SatoBookkeeping" Content File

After execution of the dependency clause[ Z, (C2, H2), C2+H2 ]:

```
<?xml version="1.0" standalone="yes">
<!-- filename : SatoBookkeeping.xml -->
<SatoBookkeeping>
  <AnnualIncome Cname = "Z" >
    18,000,000
  </AnnualIncome>
  <AnnualExpense>
    <Food>
    </Food>
    <HousingLoan>
    </HousingLoan>
    <Miscellaneous>
    </Miscellaneous>
  </AnnualExpense>
</SatoBookkeeping>
```

*Fig. 6*

“SatoBookkeeping” Constraint File

```
<?xml version="1.0" standalone="no" ?>
<!DOCTYPE Constraints SYSTEM "http://www.iuj.ac.jp/xml/Constraints.dtd">
<Constraints>
    <Target docURL="http://www.iuj.ac.jp/xml/SatoBookkeeping.xml">
        SatoBookkeeping
    </Target>
    <Reference docURL="http://www.iuj.ac.jp/xml/FatherInfo.xml">
        FatherInfo
    </Reference>
    <Reference docURL="http://www.iuj.ac.jp/xml/MotherInfo.xml">
        MotherInfo
    </Reference>
    <Definition>
        <Cvariable>    Z   </Cvariable>

        <math>
            <apply>
                <plus/>
                <ci> C2 </ci>
                <ci> H2 </ci>
            </apply>
        </math>
    </Definition>
</Constraints>
```

## Fig. 7

### "SatoTelephoneDirecory" Content File

After execution of the dependency clause [ W, (C1, H1), buildTree(C1, H1) ]

```
<?xml version="1.0" standalone="yes">
<!-- file name :  SatoTelephoneDirectory.xml  -->
<SatoTelephoneDirectory>
    <Home>
        025 634 9120
    </Home>
    <Work Cname= "W" >
        <FatherContactAtWork Cname= "C1" >
            <DirectPhone>
                025 432 3229
            </DirectPhone>
            <Secretary>
                <SecretaryName>
                    Ken Morita
                </SecretaryName>
                <SecretaryPhone>
                    025 432 3231
                </SecretaryPhone>
            </Secretary>
        </FatherContactAtWork>

        <MotherContactAtWork Cname= "H1" >
            <DirectPhone>
                025 876 1458
            </DirectPhone>
            <EmergencyPhone>
                025 876 1450
            </EmergencyPhone>
        </MotherContactAtWork>
    </Work>
</SatoTelephoneDirectory>
```

## Fig. 8

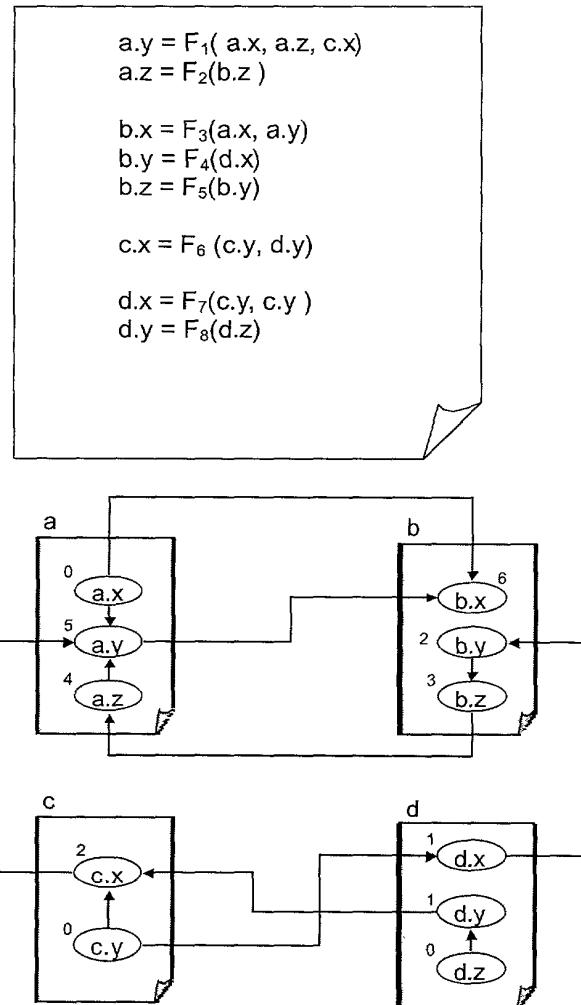
### “SatoTelephoneDirecory” Constraint File

```
<?xml version="1.0" standalone="no" ?>
<!DOCTYPE Constraints SYSTEM "http://www.iuj.ac.jp/xml/Constraints.dtd">
<Constraints>
  <Target docURL="http://www.iuj.ac.jp/xml/SatoTelephoneDirectory.xml">
    SatoTelephoneDirectory
  </Target>
  <Reference docURL="http://www.iuj.ac.jp/xml/FatherInfo.xml">
    FatherInfo
  </Reference>
  <Reference docURL="http://www.iuj.ac.jp/xml/MotherInfo.xml">
    MotherInfo
  </Reference>
  <Definition>
    <Cvariable> W </Cvariable>
    <math>
      <apply>
        <buildTree/>
        <ci> C1 </ci>
        <ci> H1 </ci>
      </apply>
    </math>
  </Definition>
</Constraints>
```

# Fig. 9

## Content Nets: an Example

- The set of content files :  $\{a, b, c, d\}$
- Constraint File in which dependency relationships are separated from contents.



Notes:



: Web documents



: Active elements

a.x, a.y, ... d.y, d.z : Element identifiers

a.x, c.y, d.z : Initial elements

Fig. 10

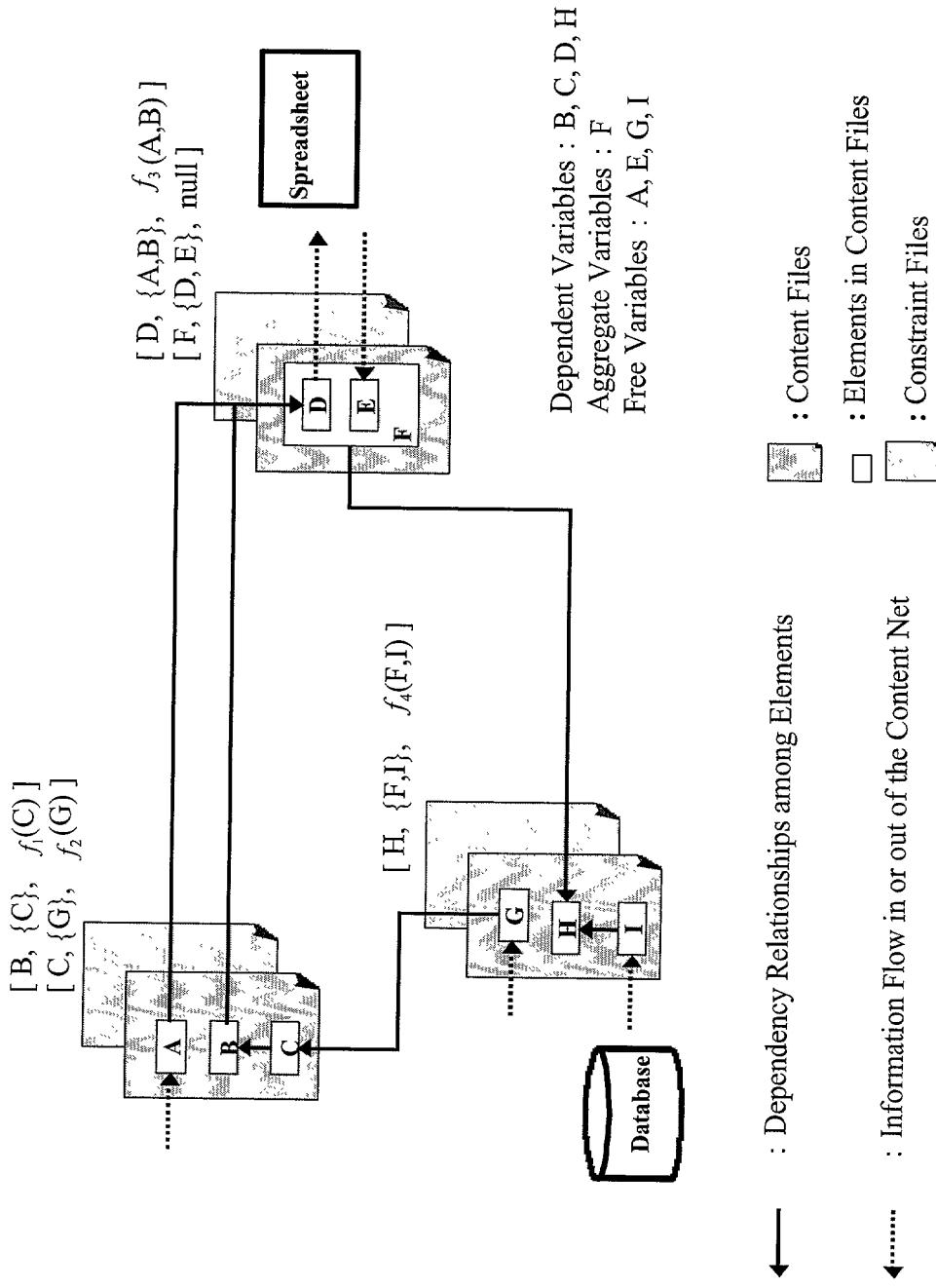


Fig. 11

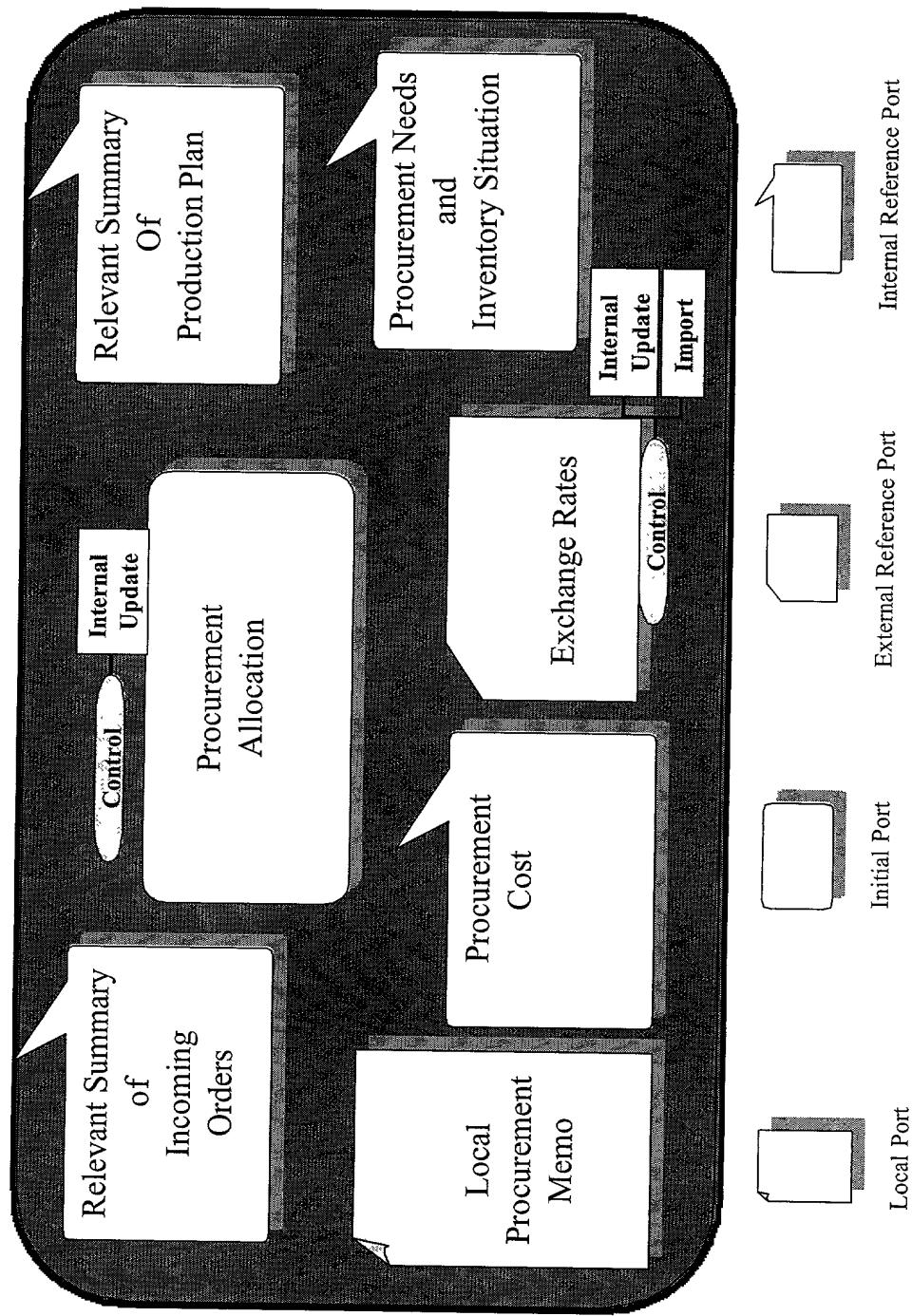


Fig. 12

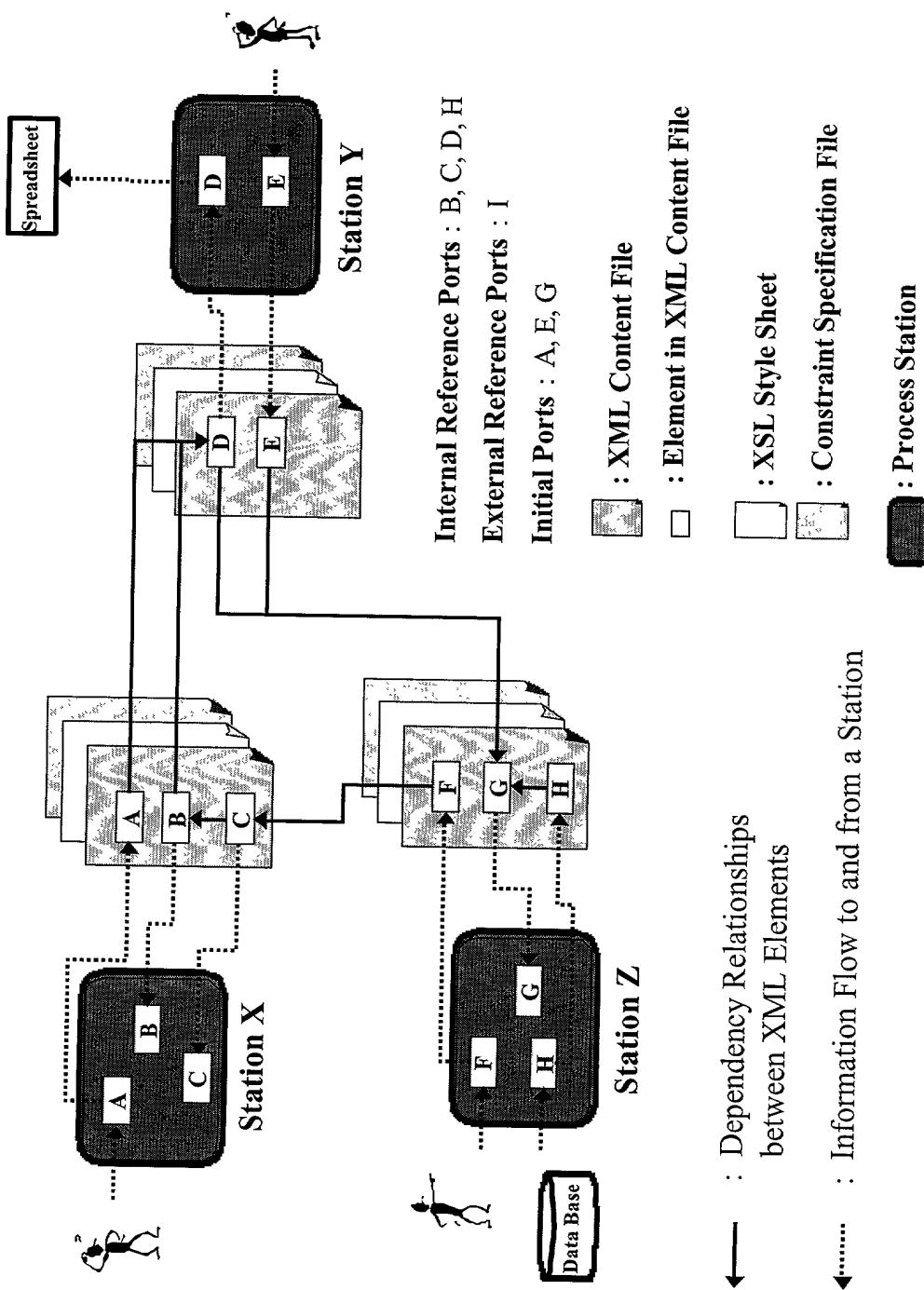


Fig. 13

